

Amendments to the Specification

On page 7 of the specification, please replace the paragraphs beginning at line 4 and ending with line 21 with the following amended paragraphs:

Receiving ~~and digitizing~~ a weak global positioning system C/A code digitized data signal of a length of N ~~longer than 1 ms~~;

generating a complex radio frequency digitized signal with a length of N ms as a local reference signal;

first multiplying said digitized data signal from said receiving step with said digitized complex radio frequency signal;

dividing a product from an output of said multiplying step of digitized data signal with digitized complex radio frequency signal into N equal sections;

adding data signals in N equal sections together from said dividing step;

first applying a fast Fourier transform to a sum of data signals from an output of said adding step;

~~considering acquiring~~ 1ms of digitized C/A code of a preselected GPS satellite;

second applying a fast Fourier transform ~~on the output to said 1 ms of digitized C/A code of a preselected GPS satellite from~~ of said considering acquiring step;

taking a complex conjugate ~~of an output of said fast Fourier transformation from~~ said second applying step;

second multiplying said complex conjugate from an output of said taking step with said fast Fourier transformation from output of said first applying step; and

taking an inverse fast Fourier transform of a product from the output of said second multiplying step ~~steps~~, an index of the maximum of said inverse fast Fourier transform being ~~the~~ an initial phase of the C/A code.

On page 8 of the specification, please replace the first paragraph under "Detailed Description", with the following amended paragraph:

The present invention simplifies the calculation of a coherent acquisition method for weak coarse/acquisition (C/A) code. The present invention may be described as a signal folding acquisition method because several 1 ms of data are folded and added. For purposes of simplicity, and in order to be comparably descriptive with conventional methods previously described, the signal folding acquisition method will be illustrated using 10 ms

of data, however the present invention is operable with a wide range of N values, signal record lengths.

Please replace the paragraphs beginning at page 9, line 12 and ending at page 10, line 12 with the following amended paragraphs:

Since most of the values in the 50,000 point $C(k)$ are zeros, the corresponding terms in $S_1(k)C(k)$ are also zero. The acquisition method can be simplified as follows and is illustrated in FIGs. 9 and 10 of the drawings:

(a) Generate a complex RF signal of 10 ms long, illustrated at 900 in FIG. 9, as shown in Eq. 2 with a frequency resolution of 100 Hz. To cover 20 KHz frequency range, 201 frequency bins are required.

(b) Multiply a GPS antenna received input signal, illustrated at 901 in FIG. 9, by the complex RF signal from (a) and the result is

$$s_1(n) = s(n) \cdot rf(n) \quad (\text{Eq. 6})$$

where $s(n)$ has 50,000 points.

(c) Divide s_1 into 10 equal sections and each has 5,000 points, illustrated at 902 in FIG. 9. Add all the ten sections together, illustrated at 1000 in FIG. 10, and the result is $s_2(n)$, which has 5,000 points. Take the FFT of $s_2(n)$, illustrated at 1001 in FIG. 10, the result is

$$S_2(k) = \text{FFT}[s_2(n)] \quad (\text{Eq. 7})$$

(d) Take the C/A code of a certain satellite of 1 ms long and call this signal $c_1(n)$.

(e) Take the FFT of $c_1(n)$ and then take the complex conjugate, illustrated at 1002 in FIG. 10, as $C_1(k)$ and then multiply with $S_2(k)$ and take the inverse FFT, illustrated at 1003. The result is

$$r_1(n) = \text{IFFT}[S_2(k)C_1(k)] \quad (\text{Eq. 8})$$

where $r_1(n)$ is the circular correlation result of $s_2(n)$ and $c_1(n)$. In this approach, the frequency search range is still 201 bins. However, in each frequency bin the FFT and inverse FFT only perform 5,000 points, minimizing the calculation burden required in conventional approaches.